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International Notes

Evaluation of Drought-Related Acute Undernutrition — Mauritania, 1983

In August 1983, the government of the Islamic Republic of Mauritania requested emergency food assistance from several international agencies to relieve major food shortages resulting from the worst drought since the early 1970s. The various donors were asked to accept responsibility for providing food and emergency health services in different segments of the country's 12 regions, which have a combined population of 1.6 million persons. The U.S. Agency for International Development (USAID) accepted responsibility for three of the most severely affected regions: Adrar (population 55,000), Tagant (population 70,000), and Trarza (population 235,000). Using CDC methodology for nutritional assessment in emergency situations (1), surveys were performed in these three regions between September 1983 and November 1983.

A total of 300 children in Adrar, 360 in Tagant, and 870 in Trarza who were between the ages of 6 months and 5 years were included in the survey. Levels of acute undernutrition, defined as greater than two standard deviations below median weight-for-height using National Center for Health Statistics/Centers for Disease Control/World Health Organization standards (2), exceeded 10% in all three regions (Table 1); normally, 3% or less of children fall below this weight-for-height level, due to reasons other than food deprivation. These levels of undernutrition were equal to or higher than those reported for Mauritania in surveys done during the 1969-1974 Sahelian drought (3). However, little overt marasmus and no kwashiorkor were seen. Scurvy was observed in two of the regions, and xerophthalmia was observed in two of the regions at levels high enough to warrant widespread vitamin A prophylaxis. History of recent diarrhea was common. In the two regions where immunization status was assessed, only one-third of eligible children had been immunized against measles. Food aid had been received by a majority of families, but often the rations were incomplete or were not delivered frequently enough to ensure minimum recommended daily caloric intake (4). Furthermore, although protein intake exceeded daily requirements, the diet contained negligible amounts of both vitamins A and C.

Reported by the Government of the Islamic Republic of Mauritania; U.S. Agency for International Development, Nouakchott, Mauritania; Office of Foreign Disaster Assistance, US Agency for International Development, Washington, DC; International Health Program Office, Div of Reproductive Health, Div of Nutrition, Center for Health Promotion and Education, CDC.

Editorial Note: The goals of the nutrition surveys performed in Mauritania were: (1) to determine the magnitude of nutrition-related health problems; (2) to determine which groups in the population were at greatest risk; (3) to determine the prevalence of other health conditions that could exacerbate the health status of an already malnourished population; and

Undernutrition – Continued

(4) to provide a baseline for intervention programs. In part, because of the survey findings, USAID has worked with the government of Mauritania to encourage more adequate and timely distribution of wheat, vitamin-fortified milk powder, and oil rations. Temporary supplementary feeding centers have been set up in main population centers, and USAID has distributed large quantities of oral rehydration salts and vitamin C tablets in the three regions for which it has accepted responsibility. A national plan for xerophthalmia prophylaxis and treatment is being developed, and efforts are under way to intensify the current mobile and fixed center immunization programs. Finally, a mortality and nutrition surveillance system designed to provide information useful in targeting relief efforts is being field-tested in the Adrar region. This system uses village leaders to collect simple census and demographic data, periodic age- and sex-specific mortality data, and arm circumference measurements of children.

CDC also participated recently in a health and nutrition assessment in Mozambique (5). Such population-based studies have been useful in planning and monitoring emergency food assistance programs. AID* has notified its missions in other drought-affected countries in Africa about the availability of this type of technical assistance.

References

1. CDC. A manual for the basic assessment of nutrition status in potential crisis situations. Atlanta, Georgia: Department of Health and Human Services, 1981.
2. National Center for Health Statistics. NCHS growth curves for children, birth-18 years, United States. Rockville, Maryland: National Center for Health Statistics, 1977; DHEW publication no. (PHS)78-1650. (Vital and health statistics; series 11: Data from the National Health Survey, no. 165).

*AID refers to the parent agency in Washington, D.C.; USAID refers herein to the AID mission in Mauritania.

TABLE 1. Summary of nutrition surveys in three regions – Mauritania, September 1983–November 1983

Characteristic (%)	Region		
	Adrar (300 persons)	Tagant (356 persons)	Trarza (842 persons)
Children > two standard deviations below median weight-for-height	17.3	22.5	11.6
Diarrhea within past 2 weeks	54.7	56.5	46.7
Xerophthalmia*	2.7	2.5	0.4
Scurvy†	0.0	1.1	0.0
Measles vaccination§	29.7	31.2	—
When last food aid received			
Within past month	3.7	10.4	22.1
1-3 months ago	19.7	26.7	47.6
≥ 4 months ago	26.4	33.4	4.2
Never	50.2	29.5	26.1

*Diagnosed by presence of Bitot's spots, corneal ulceration, and/or corneal scarring.

†Diagnosed by presence of bleeding gums and/or swollen joints.

§Determined by immunization card or appropriate history.

Undernutrition – Continued

3. Kloth TI, Burr WA, Davis JP, et al. Sahel nutrition survey, 1974. *Am J Epidemiol* 1976;3:383-90.
4. de Ville de Goyet C, Seaman J, Geijer U. The management of nutritional emergencies in large populations. Geneva: World Health Organization, 1978.
5. Rutherford GW. Use of nutritional morbidity and mortality surveys in planning a disaster relief program, Mozambique. Presented at the 33rd Annual Conference of the Epidemic Intelligence Service, Atlanta, Georgia, April 1984.

*Epidemiologic Notes and Reports***Exposure to Ammonia
during Removal of Paint from Artificial Turf — Ohio**

Complaints of respiratory and conjunctival irritation were reported among workers using anhydrous ammonia to remove painted lines from artificial turf at a sports stadium in Cincinnati, Ohio. About five times each year, when professional baseball and football seasons overlap, lines on the playing field must be altered repeatedly to accommodate the use of the stadium for both sports. In August 1983, investigators from the National Institute for Occupational Safety and Health (NIOSH) evaluated the symptoms reported by the workers (1). The investigators interviewed 26 workers about symptoms associated with the paint-removal procedure and collected air samples to measure airborne exposures to ammonia during such operations.

Of 26 workers interviewed, 25 (96.2%) reported "burning eyes," 18 (69.2%) "nasal congestion," and 16 (61.5%) "acute shortness of breath" during the paint-removal operation. Although NIOSH-certified respirators were available, the respirators were old, poorly maintained, and used sporadically. No formal respiratory protection program was followed. Few workers were observed wearing gloves and goggles.

Results of tests for ammonia on 18 samples of air from the personal-breathing-zones of workers revealed that time-weighted-average (TWA) concentrations ranged from 11.9 parts per million (ppm) to 52.4 ppm. The current Occupational Safety and Health Administration standard for ammonia establishes a permissible exposure limit at 50 ppm expressed as a TWA (2). The American Conference of Governmental Industrial Hygienists has recommended that TWA concentrations of ammonia be less than 25 ppm (3).

Mean short-term (15-minute) exposures were much higher than the TWAs for workers who used buffers to remove the lines after anhydrous ammonia was applied; the average short-term exposure was 90 ppm, and the maximum exceeded 300 ppm for workers who actually applied ammonia. NIOSH recommends that short-term exposures to ammonia not exceed 50 ppm (4).

Based on these observations, the investigators recommended that a more dilute solution of aqueous ammonia (reduced from 20% to 8%) be used to remove the lines (these recommendations are in accordance with those of the artificial turf manufacturer). NIOSH also recommended that appropriate protective equipment for the eyes, skin, and respiratory tract be provided and that workers be properly trained in the use of such equipment.

Reported by the Hazard Evaluations and Technical Assistance Br, Div of Surveillance, Hazard Evaluations, and Field Studies, National Institute for Occupational Safety and Health, CDC.

Editorial Note: Ammonia is a severe irritant of the eyes, respiratory tract, and skin. Acute exposure to high concentrations of ammonia gas may produce severe burns of the cornea and skin; splashing liquid ammonia into the eyes has caused blindness (5). Repeated exposure may cause chronic irritation of the conjunctivae and upper respiratory tract (4).

Exposure to Ammonia — Continued

The major hazard found in this investigation was the short-term exposure of workers to high concentrations (over 300 ppm) of ammonia. By diluting the ammonia and using appropriate protective equipment, this problem is preventable.

References

1. National Institute for Occupational Safety and Health. Health hazard evaluation report no. HETA 83-381-1411. Cincinnati, Ohio: National Institute for Occupational Safety and Health, 1984.
2. Occupational Safety and Health Administration. OSHA safety and health standards. 29 CFR 1910.1000. Occupational Safety and Health Administration, revised 1980.
3. American Conference of Governmental Industrial Hygienists. Threshold limit values for chemical substances and physical agents in the workroom environment with intended changes for 1982. Cincinnati, Ohio: American Conference of Governmental Industrial Hygienists, 1982.
4. National Institute for Occupational Safety and Health. Criteria for a recommended standard: occupational exposure to ammonia. Cincinnati, Ohio: National Institute for Occupational Safety and Health, 1974. DHEW publication no. (NIOSH) 74-136.
5. Proctor NH, Hughes JP. Chemical hazards of the workplace. Philadelphia: JB Lippincott Company, 1978.

TABLE I. Summary—cases of specified notifiable diseases, United States

Disease	40th Week Ending			Cumulative, 40th Week Ending		
	Oct. 6, 1984	Oct. 8, 1983	Median 1979-1983	Oct. 6, 1984	Oct. 8, 1983	Median 1979-1983
Acquired Immunodeficiency Syndrome (AIDS)*	80	35	N	3,183	1,461	N
Aseptic meningitis	235	519	337	5,703	9,426	6,799
Encephalitis: Primary (arthropod-borne & unspec.)	32	59	47	802	1,405	1,146
Post-infectious	-	1	2	76	76	76
Gonorrhea: Civilian	11,803	19,021	21,089	634,107	691,625	765,510
Military	195	486	543	16,355	18,749	20,951
Hepatitis: Type A	293	452	538	15,945	16,018	19,266
Type B	321	462	431	19,411	18,296	15,610
Non A, Non B	43	63	N	2,773	2,607	N
Unspecified	78	157	222	4,247	5,556	7,857
Legionellosis	18	16	N	500	550	N
Leprosy	-	4	4	174	193	167
Malaria	12	18	28	712	646	851
Measles: Total**	8	20	39	2,331	1,280	2,673
Indigenous	7	7	N	2,067	1,047	N
Imported	1	13	N	264	233	N
Meningococcal infections: Total	38	38	41	2,134	2,146	2,146
Civilian	38	38	40	2,129	2,131	2,131
Military	-	-	-	-	15	15
Mumps	24	41	71	2,305	2,573	4,393
Pertussis	38	43	40	1,764	1,866	1,204
Rubella (German measles)	10	11	29	631	804	2,058
Syphilis (Primary & Secondary): Civilian	311	695	617	21,271	24,903	23,508
Military	3	2	3	237	309	289
Toxic Shock syndrome	10	5	N	375	341	N
Tuberculosis	318	458	505	16,324	17,965	20,693
Tularemia	6	3	6	254	234	202
Typhoid fever	5	9	10	248	334	382
Typhus fever, tick-borne (RMSF)	13	11	17	750	1,029	1,029
Rabies, animal	57	77	118	4,053	4,896	4,943

TABLE II. Notifiable diseases of low frequency, United States

	Cum 1984		Cum 1984
Anthrax	1	Plague	23
Botulism: Foodborne (Alaska 3)	13	Poliomyelitis: Total	3
Infant (Wash. 1)	70	Paralytic	3
Other	6	Psittacosis (S.C. 1)	68
Brucellosis	88	Rabies, human (Pa. 1)	2
Cholera	-	Tetanus	47
Congenital rubella syndrome	3	Trichinosis (Pa. 1)	62
Diphtheria	1	Typhus fever, flea-borne (endemic, murine)	22
Leptospirosis (Fla. 1)	25		

*The 1983 reports which appear in this table were collected before AIDS became a notifiable condition.

**One of the 8 reported cases for this week was imported from a foreign country or can be directly traceable to a known internationally imported case within two generations.

TABLE III. Cases of specified notifiable diseases, United States, weeks ending
October 6, 1984 and October 8, 1984 (40th Week)

Reporting Area	AIDS	Aseptic Mening- itis	Encephalitis		Gonorrhoea (Civilian)		Hepatitis (Viral), by type				Legionel- losis	Leprosy
			Primary	Post-in- fectious			A	B	NA,NB	Unspeci- fied		
	Cum. 1984	1984	Cum. 1984	Cum. 1984	Cum. 1984	Cum. 1983	1984	1984	1984	1984	1984	Cum. 1984
UNITED STATES	3,183	235	802	76	634,107	691,625	293	321	43	78	18	174
NEW ENGLAND	101	8	37	1	17,975	17,528	9	21	-	21	-	9
Maine	-	-	-	-	755	860	-	-	-	-	-	-
N.H.	1	-	6	-	543	569	3	3	-	-	-	-
Vt.	-	-	4	-	289	349	-	-	-	-	-	-
Mass.	57	3	17	-	7,392	7,543	4	14	-	21	-	6
R.I.	6	4	10	-	1,322	979	2	4	-	-	-	3
Conn.	37	1	-	1	7,674	7,228	-	-	-	-	-	-
MID ATLANTIC	1,400	46	103	10	86,317	88,280	40	71	4	7	2	33
Upstate N.Y.	128	21	36	7	13,659	14,388	6	7	2	2	-	2
N.Y. City	1,013	9	10	-	34,297	34,938	12	38	-	2	-	30
N.J.	183	6	26	-	14,968	16,609	22	26	2	3	2	-
Pa.	76	10	31	3	23,393	22,281	-	-	-	-	-	1
E.N. CENTRAL	141	61	222	18	89,754	100,269	36	57	7	5	12	6
Ohio	16	23	67	9	23,070	25,585	16	22	2	1	-	2
Ind.	22	7	57	-	10,022	10,276	4	14	1	1	8	-
Ill.	71	-	25	6	20,461	29,133	3	4	1	1	-	2
Mich.	22	31	47	-	26,229	26,587	13	17	3	2	4	2
Wis.	10	-	26	3	9,972	8,688	-	-	-	-	-	-
W.N. CENTRAL	32	16	68	3	31,468	32,801	31	18	3	-	-	1
Minn.	8	8	27	-	4,760	4,574	3	3	-	-	-	-
Iowa	2	2	27	-	3,432	3,524	1	1	-	-	-	1
Mo.	17	5	8	-	15,122	16,201	14	7	2	-	-	-
N. Dak.	-	1	-	-	300	344	-	-	-	-	-	-
S. Dak.	-	-	1	1	724	832	9	1	1	-	-	-
Nebr.	2	-	1	-	2,253	2,060	3	5	-	-	-	-
Kans.	3	-	4	2	4,877	5,266	1	1	-	-	-	-
S. ATLANTIC	435	28	121	15	160,864	177,943	22	69	12	15	1	7
Del.	5	-	1	-	2,944	3,246	3	2	2	-	-	-
Md.	34	8	25	-	18,823	23,021	-	12	-	8	-	1
D.C.	67	1	-	-	11,555	12,277	-	-	-	-	-	1
Va.	27	2	25	5	15,380	16,191	-	9	1	2	-	4
W. Va.	4	3	21	-	2,050	1,996	-	-	-	-	1	-
N.C.	10	6	22	7	26,322	27,531	1	7	1	1	-	-
S.C.	7	-	4	-	16,564	16,735	3	9	-	-	-	-
Ga.	45	-	2	1	28,722	35,161	-	-	-	-	-	-
Fla.	236	8	21	2	38,504	41,785	15	30	8	4	-	1
E.S. CENTRAL	22	7	42	7	56,618	57,937	6	27	9	1	-	-
Ky.	9	-	8	-	6,732	6,780	3	7	2	-	-	-
Tenn.	6	4	14	1	23,400	23,969	-	13	5	-	-	-
Ala.	5	-	18	5	17,727	17,852	-	1	2	1	-	-
Miss.	2	3	2	1	8,759	9,336	3	6	-	-	-	-
W.S. CENTRAL	225	55	65	4	85,865	97,522	76	29	2	22	3	17
Ark.	1	-	-	2	7,669	7,698	15	2	-	6	3	1
La.	31	2	6	-	19,535	18,334	5	3	1	-	-	1
Okla.	7	7	19	1	9,614	11,300	11	5	-	-	-	-
Tex.	186	46	40	1	49,047	60,190	45	19	1	16	-	15
MOUNTAIN	53	7	21	10	20,759	22,064	54	22	5	6	-	8
Mont.	-	-	-	-	849	903	1	2	-	-	-	-
Idaho	-	-	-	-	997	979	4	2	-	1	-	-
Wyo.	1	-	-	-	590	599	-	-	-	-	-	-
Colo.	29	4	7	-	5,828	6,123	8	4	-	1	-	-
N. Mex.	-	-	-	-	2,521	2,720	3	2	-	-	-	-
Ariz.	11	1	9	3	5,647	6,271	26	8	5	1	-	6
Utah	7	-	5	7	1,008	1,062	6	1	-	-	-	1
Nev.	5	2	-	-	3,319	3,407	6	3	-	3	-	1
PACIFIC	774	7	123	8	84,487	97,353	19	7	1	1	-	93
Wash.	38	6	7	-	6,467	7,575	4	4	-	1	-	3
Oreg.	7	-	-	-	5,086	5,178	15	3	1	-	-	1
Calif.	716	U	113	8	69,301	80,195	U	U	U	U	U	74
Alaska	1	-	-	-	2,154	2,517	-	-	-	-	-	-
Hawaii	12	1	3	-	1,479	1,888	-	-	-	-	-	15
Guam	-	U	-	-	95	114	U	U	U	U	U	-
P.R.	33	2	3	1	2,676	2,201	2	15	-	1	-	2
V.I.	-	-	-	-	365	218	-	-	-	-	-	-
Pac. Trust Terr.	-	U	-	-	-	-	U	U	U	U	U	-

N: Not notifiable

U: Unavailable

TABLE III. (Cont'd.) Cases of specified notifiable diseases, United States, weeks ending
October 6, 1984 and October 8, 1984 (40th Week)

Reporting Area	Malaria	Measles (Rubeola)					Meningococcal infections	Mumps		Pertussis			Rubella		
		Indigenous		Imported *		Total		1984	Cum. 1984	1984	Cum. 1984	Cum. 1983	1984	Cum. 1984	Cum. 1983
		1984	Cum. 1984	1984	Cum. 1984	Cum. 1983									
UNITED STATES	712	7	2,067	1	264	1,280	2,134	24	2,305	38	1,764	1,866	10	631	804
NEW ENGLAND	43	-	93	-	12	16	142	2	72	5	52	61	-	20	15
Maine	-	-	-	-	-	-	-	1	23	-	2	4	-	1	-
N.H.	-	-	33	-	3	3	7	-	15	1	8	9	-	1	4
Vt.	5	-	2	-	5	-	26	-	5	3	23	8	-	-	5
Mass.	25	-	48	-	-	5	63	1	11	1	13	34	-	18	6
R.I.	4	-	-	-	-	-	12	-	9	-	2	5	-	-	-
Conn.	9	-	10	-	4	8	33	-	9	-	4	1	-	-	-
MID ATLANTIC	114	-	117	1	37	111	356	4	272	6	155	332	1	218	137
Upstate N.Y.	23	-	24	-	12	12	118	1	75	6	90	103	-	99	28
N.Y. City	32	-	89	1†	16	69	77	-	23	-	7	54	1	99	86
N.J.	34	-	4	-	2	27	70	2	132	-	11	19	-	16	3
Pa.	25	-	-	-	7	3	91	1	42	-	47	156	-	4	20
E.N. CENTRAL	67	3	615	-	71	661	340	13	916	2	398	424	-	84	119
Ohio	15	-	3	-	6	85	114	10	452	-	68	127	-	2	2
Ind.	2	-	2	-	1	400	43	-	53	-	225	48	-	5	23
Ill.	23	-	177	-	1	168	74	1	172	2	24	145	-	49	50
Mich.	15	3	411	-	54	7	67	2	163	-	28	34	-	20	16
Wis.	12	-	22	-	9	1	42	-	76	-	53	70	-	8	28
W.N. CENTRAL	21	1	39	-	8	8	132	-	94	3	114	115	-	35	39
Minn.	7	-	35	-	3	1	28	-	6	2	14	40	-	4	8
Iowa	2	-	-	-	-	-	21	-	22	-	10	6	-	1	-
Mo.	6	1	4	-	-	1	40	-	9	-	18	22	-	-	-
N. Dak.	1	-	-	-	-	-	1	-	2	-	-	2	-	3	-
S. Dak.	1	-	-	-	-	-	6	-	-	1	9	7	-	-	-
Nebr.	2	-	-	-	-	-	11	-	4	-	11	2	-	-	-
Kans.	2	-	-	-	5	6	25	-	51	-	52	36	-	27	31
S. ATLANTIC	106	2	18	-	29	204	450	-	167	5	136	230	-	22	94
Del.	4	-	-	-	-	-	5	-	2	-	2	3	-	-	-
Md.	27	2	8	-	14	10	36	-	33	2	13	29	-	1	3
D.C.	1	-	-	-	-	-	8	-	-	-	-	-	-	-	-
Va.	27	-	1	-	2	23	49	-	17	-	15	48	-	-	2
W. Va.	1	-	-	-	-	-	5	-	36	-	11	9	-	-	-
N.C.	2	-	-	-	1	73	17	-	17	-	32	27	-	-	10
S.C.	8	-	-	-	4	50	-	-	4	-	1	13	-	-	1
Ga.	11	-	-	-	1	8	84	-	17	-	10	64	-	2	13
Fla.	25	-	9	-	7	158	140	-	41	3	52	37	-	19	65
E.S. CENTRAL	8	-	1	-	2	6	122	1	46	1	13	26	9	18	14
Ky.	1	-	1	-	-	1	49	-	9	1	2	11	9	12	13
Tenn.	2	-	-	-	2	-	30	-	15	-	7	5	-	-	-
Ala.	5	-	-	-	-	5	30	-	6	-	-	5	-	3	1
Miss.	-	-	-	-	-	-	13	1	16	-	4	5	-	3	-
W.S. CENTRAL	65	1	509	-	25	74	224	-	127	2	283	362	-	61	105
Ark.	-	-	8	-	-	13	33	-	7	-	15	19	-	3	-
La.	9	-	8	-	-	25	47	-	-	2	8	6	-	-	10
Okla.	8	-	-	-	8	1	23	N	N	-	234	266	-	-	-
Tex.	48	1	493	-	17	35	121	-	120	-	26	71	-	58	95
MOUNTAIN	24	-	113	-	32	9	73	1	219	2	107	202	-	20	30
Mont.	1	-	-	-	-	-	2	-	7	-	19	1	-	-	3
Idaho	2	-	-	-	23	5	9	-	9	-	7	15	-	1	8
Wyo.	-	-	-	-	-	1	2	-	2	-	6	6	-	2	4
Colo.	6	-	-	-	6	2	26	1	19	1	35	123	-	2	1
N. Mex.	1	-	88	-	-	-	7	N	N	-	8	11	-	-	-
Ariz.	9	-	-	-	1	1	15	-	167	1	23	22	-	4	6
Utah	5	-	25	-	2	-	7	-	11	-	7	24	-	7	7
Nev.	-	-	-	-	-	-	5	-	4	-	2	-	-	4	1
PACIFIC	264	-	562	-	48	191	295	3	392	12	506	114	-	153	251
Wash.	10	-	125	-	14	5	46	2	42	12	292	16	-	1	9
Oreg.	10	-	-	-	-	9	43	N	N	-	28	8	-	2	13
Calif.	240	U	278	U	30	174	198	U	320	U	114	83	U	145	227
Alaska	-	-	-	-	-	2	7	1	9	-	-	4	-	1	1
Hawaii	4	-	159	-	4	1	1	-	21	-	72	3	-	4	1
Guam	1	U	83	U	2	2	1	U	5	U	-	-	U	2	-
P.R.	1	-	1	-	-	94	3	2	144	-	1	11	2	11	5
V.I.	-	-	-	-	-	5	-	-	5	-	-	-	-	-	2
Pac. Trust Terr.	-	U	-	U	-	-	-	U	-	U	-	-	U	-	-

*For measles only, imported cases includes both out-of-state and international importations.

N Not notifiable U Unavailable †International §Out-of-state

TABLE III. (Cont'd.) Cases of specified notifiable diseases, United States, weeks ending
October 6, 1984 and October 8, 1984 (40th Week)

Reporting Area	Syphilis (Civilian) (Primary & Secondary)		Toxic- shock Syndrome	Tuberculosis		Tula- remia	Typhoid Fever	Typhus Fever (Tick-borne) (RMSF)	Rabies, Animal
	Cum. 1984	Cum. 1983	1984	Cum. 1984	Cum. 1983	Cum. 1984	Cum. 1984	Cum. 1984	Cum. 1984
UNITED STATES	21,271	24,903	10	16,324	17,965	254	248	750+13	4,053
NEW ENGLAND	406	519	1	485	535	6	15	5	44
Maine	4	17	-	21	28	-	-	-	12
N.H.	12	19	-	25	31	-	-	-	15
Vt.	1	1	-	9	7	-	-	-	-
Mass.	231	324	-	265	282	6	12	4	9
R.I.	16	16	-	37	47	-	-	-	-
Conn.	142	142	1	128	140	-	3	1	8
MID ATLANTIC	2,903	3,251	1	2,982	3,158	1	42	22	369
Upstate N.Y.	228	293	-	477	502	-	12	7	76
N.Y. City	1,804	1,909	-	1,197	1,268	1	12	2	-
N.J.	505	631	-	674	674	-	12	3	29
Pa.	366	418	1	634	714	-	6	10	264
E.N. CENTRAL	1,026	1,335	1	2,131	2,395	8	38	55+	180
Ohio	188	336	1	384	377	-	6	36	20
Ind.	109	92	-	252	264	-	4	6	20
Ill.	357	647	-	890	1,041	8	16	10	62
Mich.	309	191	-	471	589	-	5	3	21
Wis.	63	69	-	134	124	-	7	-	57
W.N. CENTRAL	292	305	3	508	589	77	9	46	621
Minn.	80	117	-	84	119	1	3	1	67
Iowa	11	19	1	56	55	-	-	6	125
Mo.	148	114	1	254	301	39	4	12	55
N. Dak.	10	2	-	10	6	-	-	-	123
S. Dak.	-	11	-	18	33	34	-	5	163
Nebr.	11	12	1	27	20	-	-	4	40
Kans.	32	30	-	59	55	3	2	18	48
S. ATLANTIC	6,278	6,628	2	3,482	3,614	7	31	353	1,142
Del.	23	28	-	49	50	-	-	1	4
Md.	395	409	1	349	283	-	2	29	594
D.C.	251	295	-	140	149	-	6	-	-
Va.	331	448	-	358	376	1	8	52	173
W. Va.	14	21	-	104	111	-	-	6	37
N.C.	640	641	1	492	541	1	1	144	24
S.C.	603	416	-	410	332	-	1	76	49
Ga.	1,059	1,191	-	547	639	4	1	42	154
Fla.	2,962	3,179	-	1,033	1,133	1	12	3	107
E.S. CENTRAL	1,511	1,728	-	1,525	1,609	5	6	78	202
Ky.	81	128	-	357	407	-	2	16	47
Tenn.	404	476	-	452	477	5	2	41	70
Ala.	489	685	-	457	414	-	1	13	85
Miss.	537	439	-	259	311	-	1	8	-
W.S. CENTRAL	5,158	6,439	-	1,870	2,193	108	15	175 + 1	816
Ark.	152	154	-	201	262	79	-	30	92
La.	950	1,321	-	261	346	7	1	3	47
Okla.	170	161	-	175	196	17	3	115	90
Tex.	3,886	4,803	-	1,233	1,389	5	11	27	587
MOUNTAIN	476	525	2	439	497	32	12	12	236
Mont.	3	7	-	17	41	3	1	8	102
Idaho	21	7	1	26	27	7	-	1	9
Wyo.	4	10	-	-	12	1	-	3	17
Colo.	125	121	1	54	66	6	4	-	39
N. Mex.	65	145	-	87	89	2	3	-	11
Ariz.	162	132	-	203	192	4	3	-	40
Utah	18	20	-	30	36	4	-	-	3
Nev.	78	83	-	22	34	5	1	-	15
PACIFIC	3,221	4,173	-	2,902	3,375	10	80	4	443
Wash.	120	151	-	148	192	2	3	-	3
Oreg.	88	114	-	120	143	2	2	1	1
Calif.	2,948	3,834	U	2,413	2,795	6	70	2	431
Alaska	6	12	-	52	58	-	1	1	8
Hawaii	59	62	-	169	187	-	4	-	-
Guam	-	-	U	5	5	-	-	-	-
P.R.	639	765	-	292	380	-	3	-	54
V.I.	8	17	-	3	2	-	3	-	-
Pac. Trust Terr.	-	-	U	-	-	-	-	-	-

U: Unavailable

TABLE IV. Deaths in 121 U.S. cities,* week ending
October 6, 1984 (40th Week Ending)

Reporting Area	All Causes, By Age (Years)						P&I** Total	Reporting Area	All Causes, By Age (Years)						P&I** Total
	All Ages	≥65	45-64	25-44	1-24	<1			All Ages	≥65	45-64	25-44	1-24	<1	
NEW ENGLAND	706	495	132	44	17	18	31	S. ATLANTIC	1,132	714	245	93	33	47	59
Boston, Mass.	192	109	47	19	9	8	10	Atlanta, Ga.	147	95	30	11	4	7	4
Bridgeport, Conn.	52	37	9	4	2	-	3	Baltimore, Md.	239	153	53	18	7	8	12
Cambridge, Mass.	25	18	4	3	-	-	3	Charlotte, N.C.	82	46	21	11	2	2	9
Fall River, Mass.	31	24	5	2	-	-	3	Jacksonville, Fla.	85	51	17	10	5	2	6
Hartford, Conn.	61	47	10	2	-	2	3	Miami, Fla.	46	23	10	8	2	3	-
Lowell, Mass.	27	20	5	1	-	1	3	Norfolk, Va.	56	32	10	4	4	6	2
Lynn, Mass.	20	15	4	1	-	-	-	Richmond, Va.	66	40	17	4	1	4	6
New Bedford, Mass.	21	16	5	-	-	-	-	Savannah, Ga.	39	28	9	1	1	3	-
New Haven, Conn.	42	26	10	3	1	2	1	St. Petersburg, Fla.	89	84	3	2	-	-	3
Providence, R.I.	70	48	15	4	3	-	3	Tampa, Fla.	66	36	18	5	2	5	8
Somerville, Mass.	18	17	1	-	-	-	1	Washington, D.C.	161	86	46	15	5	9	4
Springfield, Mass.	34	24	7	2	-	1	1	Wilmington, Del.	56	40	11	4	-	1	2
Waterbury, Conn.	44	33	7	1	1	2	3	E.S. CENTRAL	685	419	164	54	27	20	28
Worcester, Mass.	69	61	3	2	1	2	-	Birmingham, Ala.	102	60	20	14	3	5	1
MID ATLANTIC	2,415	1,927	244	91	71	57	107	Chattanooga, Tenn.	47	29	11	3	4	-	1
Albany, N.Y.	53	39	11	-	-	3	-	Knoxville, Tenn.	66	47	13	2	3	1	4
Allentown, Pa.	15	12	3	-	-	-	-	Louisville, Ky.	133	78	36	8	8	3	5
Buffalo, N.Y.	96	67	17	6	5	1	7	Memphis, Tenn.	127	77	32	13	3	1	8
Camden, N.J.	30	15	6	2	5	2	-	Mobile, Ala.	93	56	23	7	3	4	8
Elizabeth, N.J.	24	15	8	1	-	-	-	Montgomery, Ala.	42	29	13	-	-	-	-
Erie, Pa.†	34	23	8	1	-	2	4	Nashville, Tenn.	75	43	16	7	3	6	1
Jersey City, N.J.	38	26	5	3	1	3	-	W.S. CENTRAL	1,227	709	294	115	58	50	54
N.Y. City, N.Y. §	1,354	1,234	7	23	35	30	49	Austin, Tex.	67	41	9	6	8	3	3
Newark, N.J.	86	30	29	11	9	7	5	Baton Rouge, La.	28	6	5	3	2	-	-
Paterson, N.J.	35	23	9	2	-	1	3	Corpus Christi, Tex.	18	20	5	-	-	3	1
Philadelphia, Pa.†	242	143	60	27	7	5	14	Dallas, Tex.	214	121	52	22	9	10	9
Pittsburgh, Pa.†	71	44	24	1	2	-	4	El Paso, Tex.	42	26	8	2	2	4	4
Reading, Pa.	35	31	2	-	2	-	3	Fort Worth, Tex.	94	54	21	13	3	3	5
Rochester, N.Y.	112	79	23	6	3	1	9	Houston, Tex.	298	161	79	31	15	12	8
Schenectady, N.Y.	21	16	4	1	-	-	2	Little Rock, Ark.	132	45	18	5	-	3	4
Scranton, Pa.†	28	23	5	-	-	-	-	New Orleans, La.	172	79	36	8	7	2	-
Syracuse, N.Y.	71	54	11	3	1	2	2	San Antonio, Tex.	170	101	37	20	4	8	13
Trenton, N.J.	24	16	5	3	-	-	1	Shreveport, La.	22	14	4	1	3	-	-
Utica, N.Y.	20	17	3	-	-	-	-	Tulsa, Okla.	72	41	20	4	5	2	7
Yonkers, N.Y.	26	20	4	1	1	-	3	MOUNTAIN	574	379	115	44	16	20	28
E.N. CENTRAL	2,139	1,502	363	120	68	75	75	Albuquerque, N.Mex.	58	36	16	1	1	4	4
Akron, Ohio	58	45	11	1	1	-	-	Colo. Springs, Colo.	39	25	8	3	2	1	5
Canton, Ohio	38	25	8	3	2	-	6	Denver, Colo.	117	82	17	10	6	2	4
Chicago, Ill. §	457	388	6	15	16	21	13	Las Vegas, Nev.	82	53	22	5	1	1	1
Cincinnati, Ohio	142	94	33	8	1	6	14	Ogden, Nev.	20	15	-	2	1	2	2
Cleveland, Ohio	161	92	45	13	5	6	1	Phoenix, Ariz.	114	78	22	7	2	5	1
Columbus, Ohio	133	84	31	10	4	4	3	Pueblo, Colo.	15	9	5	1	-	-	3
Dayton, Ohio	114	76	23	6	2	7	-	Salt Lake City, Utah	51	31	8	7	3	2	1
Detroit, Mich.	269	165	56	30	5	13	3	Tucson, Ariz.	78	50	17	8	-	3	8
Evansville, Ind.	33	27	5	1	-	-	1	PACIFIC	1,849	1,371	259	90	65	45	85
Fort Wayne, Ind.	47	34	8	1	3	1	-	Berkeley, Calif.	15	14	-	-	-	1	-
Gary, Ind.	8	5	2	-	1	-	-	Fresno, Calif.	90	60	16	9	3	2	5
Grand Rapids, Mich.	50	30	9	5	3	3	3	Glendale, Calif. §	24	24	-	-	-	-	1
Indianapolis, Ind.	151	94	36	8	11	2	2	Honolulu, Hawaii	61	38	15	3	3	2	4
Madison, Wis.	34	22	5	3	1	3	3	Long Beach, Calif.	90	60	25	4	-	1	-
Milwaukee, Wis.	124	95	22	3	1	3	1	Los Angeles, Calif. §	585	530	6	1	24	7	19
Peoria, Ill.	64	43	12	3	2	4	7	Oakland, Calif.	54	33	13	2	3	3	2
Rockford, Ill.	43	34	6	1	2	-	5	Pasadena, Calif.	17	11	5	-	-	1	2
South Bend, Ind.	50	32	12	-	6	-	1	Portland, Ore.	97	73	14	6	3	1	4
Toledo, Ohio	106	72	25	8	1	-	10	Sacramento, Calif.	125	82	22	12	7	1	11
Youngstown, Ohio	57	45	8	1	1	2	2	San Diego, Calif.	156	95	37	12	7	4	16
W.N. CENTRAL	666	468	123	44	16	15	24	San Francisco, Calif.	154	91	36	14	3	10	3
Des Moines, Iowa	41	25	8	5	1	2	2	San Jose, Calif.	146	94	35	11	4	2	11
Duluth, Minn.	28	24	3	1	-	-	1	Seattle, Wash.	128	83	24	12	6	3	3
Kansas City, Kans.	35	19	12	2	2	-	-	Spokane, Wash.	63	47	9	1	2	4	1
Kansas City, Mo.	125	90	25	7	2	1	2	Tacoma, Wash.	44	36	2	3	-	3	3
Lincoln, Nebr.	32	24	4	2	2	-	2	TOTAL	11,393 ^{††}	7,984	1,939	695	371	347	491
Minneapolis, Minn.	76	49	17	5	1	4	3								
Omaha, Nebr.	73	52	10	6	2	3	8								
St. Louis, Mo.	141	109	16	8	3	5	3								
St. Paul, Minn.	68	45	18	4	1	-	-								
Wichita, Kans.	47	31	10	4	2	-	3								

* Mortality data in this table are voluntarily reported from 121 cities in the United States, most of which have populations of 100,000 or more. A death is reported by the place of its occurrence and by the week that the death certificate was filed. Fetal deaths are not included.

** Pneumonia and influenza

† Because of changes in reporting methods in these 4 Pennsylvania cities, these numbers are partial counts for the current week. Complete counts will be available in 4 to 6 weeks.

†† Total includes unknown ages.

§ Data not available. Figures are estimates based on average of past 4 weeks.

Current Trends**Pertussis — United States, 1982 and 1983**

In 1982 and 1983, 4,358 pertussis cases were reported to *MMWR* (1,895 in 1982; 2,463 in 1983). Individual case report forms* were received on 3,159 persons who had onset during this period, representing 72% of the total number of cases reported to *MMWR*. By contrast, in 1980 and 1981, report forms were received on 32% of the total cases reported to *MMWR*. Forms were received from 45 states and the District of Columbia during 1982 and 1983, compared to 40 states during 1980 and 1981. New York (540 forms), Oklahoma (347), Illinois (335), and Pennsylvania (322) submitted the largest number of forms, comprising 90% of cases reported by these states to *MMWR* and 49% of all individual case report forms received by CDC for persons with onset during 1982 and 1983. During late 1982 and early 1983, New York and Pennsylvania reported substantial localized outbreaks among members of certain religious groups that generally do not accept immunizations; during 1983, Oklahoma experienced a statewide outbreak (1).

In 1982 and 1983, the age distribution of cases reported to *MMWR* for which ages were known was similar to the cases for which report forms were received and on which ages were given, indicating the representativeness of the forms received (Table 2). Forty-three percent of persons for whom case report forms were received were under 6 months old. The crude incidence rate of reported pertussis in the United States in 1982 was 0.83 per 100,000 total population, and in 1983, 1.05/100,000. The incidence rate for children under 1 year old in 1982 was 27.2/100,000, and in 1983, 36.1/100,000.

The analyses below are limited to the 3,159 cases for which individual report forms were available. Pertussis was laboratory-confirmed in 2,154 (68%) of these cases; 9% of cases were confirmed by culture; 46%, by direct fluorescent antibody (DFA) testing of nasopharyngeal mucous smears; and 13%, by both culture and DFA.

*The occurrence of pertussis and its health impact are monitored by CDC. State health departments report pertussis cases weekly and the age distribution of cases annually to *MMWR*. Supplementary case report forms are submitted by state health departments on a portion of these cases. The forms contain information on age, sex, vaccine status, date of onset, symptoms, complications, and laboratory confirmation. In some instances, information is also received on household contacts of pertussis patients.

TABLE 2. Age distribution of reported pertussis cases for which ages were known — United States, 1982 and 1983

Age groups	Cases reported to <i>MMWR</i> (%)	Report forms received (%)
< 1 year	2,235 (53.1)	1,733 (55.1)
1-4 years	1,031 (24.5)	657 (20.9)
5-9 years	360 (8.5)	277 (8.8)
10-14 years	200 (4.7)	159 (5.1)
≥ 15 years	387 (9.2)	319 (10.1)
Total	4,213 (100.0)	3,145 (100.0)

Pertussis — Continued

Whoop was described in 50% of patients 0-5 months old, 57% of those 6-11 months old, 61% of those 1-4 years old, and 57% of those 5-9 years old. Apnea was present in 40% of patients under 1 year old. Pneumonia confirmed by x-ray occurred in 16% of reported patients (Table 3). X-ray-confirmed pneumonia was noted in 23% of patients under 6 months old, 17% of patients 6-11 months old, and 12% of patients 1-4 years old. Forty-nine percent of reported pertussis patients were hospitalized, including 77% of infants under 6 months old, 59% of those 6-11 months old, and 28% of those 1-4 years old. Seizures were reported in 59 (1.9%) of the 3,159 patients; 59% of patients with seizures were under 6 months old, and 76% were under 1 year old. Encephalopathy was reported for nine (0.3%) of the patients, eight of whom were under 1 year old. Fifteen deaths were reported, for an overall case-fatality ratio (CFR) of 0.5%. Thirteen of the deaths occurred in patients under 6 months of age, for a CFR in this age group of 1%. Nine of the deaths occurred in patients with pneumonia, one of whom was reported to have also had encephalopathy.

Based on age criteria derived from the current diphtheria-tetanus-pertussis (DTP) vaccine recommendations of the Immunization Practices Advisory Committee (ACIP),[†] 1,117 (68%) of the 1,637 reported patients 3 months to 6 years old with known vaccine status were not appropriately immunized with DTP vaccine (2). Sixty-six percent of 1,011 patients 7 months to 6 years old with known vaccine status had not received at least three doses of vaccine, the minimum number considered necessary for adequate vaccine protection against pertussis; 42% had not received any doses.

Information was available on 440 household contacts 6 months to 9 years old. Secondary attack rates were determined for unvaccinated household contacts (no DTP doses) and for household contacts who had received three or more DTP doses. Vaccine efficacy for three or more doses compared to no doses among household contacts 6 months to 9 years old was 91.4% (95% confidence limits 85.9, 94.5).

Reported by Surveillance, Investigations, and Research Br, Data Management Br, Div of Immunization, Center for Prevention Svcs, CDC.

Editorial Note: Earlier surveillance data indicated that pertussis had substantial health impact in the United States in terms of morbidity and complications, particularly in infants and young children, and that DTP vaccine provided a high level of protection against clinical disease (3). Nationwide pertussis surveillance data for 1982-1983 continue to confirm these findings.

[†]Appropriately immunized for age if received: one dose by 3 months of age; two doses by 5 months of age; three doses by 7 months of age; four doses by 19 months of age.

TABLE 3. Pertussis cases, percentage hospitalized, and percentage with other complications, by selected age groups and for all ages — United States, 1982 and 1983

Selected ages	No.	Complication			
		Hospitalized	Pneumonia*	Seizures	Encephalopathy
< 6 months	1,339	77%	23%	2.6%	0.4%
6-11 months	396	59%	17%	2.5%	0.5%
1-4 years	657	28%	12%	1.3%	0.2%
All ages [†]	3,159	49%	16%	1.9%	0.3%

*X-ray confirmed.

[†]Includes patients of all ages and 14 patients of unknown ages.

Most reported pertussis cases among children under 7 years old occurred among those inadequately vaccinated for their age. Among patients 7 months to 6 years old, 66% had received fewer than three DTP doses; many of these cases may have been vaccine-preventable.

Data in the pertussis surveillance systems suffer from underreporting of cases and, therefore, the cases reported to both systems probably include a disproportionate number of hospitalized, laboratory-confirmed, and classical cases. Nonetheless, the data are useful for estimating minimum incidence rates, maximum complication risks, the health impact of pertussis, and the benefits of vaccine usage.

Pertussis vaccine is associated with frequent minor-to-moderate local and systemic reactions (4) and with rare, but serious, neurologic reactions (5). Recommendations from the ACIP and the American Academy of Pediatrics for routine use of DTP vaccine depend on the assessment of disease and vaccine risks and the benefits of the vaccine. A reevaluation of the benefits and risks of DTP vaccine and the risks of pertussis showed that 11.1 dollars in benefits were accrued for every dollar spent for a pertussis vaccination program (6). Following the recent rise in vaccine price, a recalculation using the current price showed a 3.1:1 benefit-cost ratio (7).

As of 1983, 27 states, through legislation, required four doses of DTP for school entry, and 13 states and the District of Columbia required three doses. One state required an unspecified number of doses for school entry. Nine states did not have school entry requirements for pertussis vaccine. In the 1983-1984 school year, an estimated 95% of children entering school in the United States had received at least three doses of DTP. Because of the continued high level of vaccine coverage among persons entering school and because of laws in 42 states and the District of Columbia that require DTP for entry into licensed day-care centers, the current risk of acquiring pertussis remains low. To further reduce the occurrence of pertussis and its health impact, efforts must be intensified to provide DTP to all children without specific contraindications to pertussis vaccine as soon as they become eligible for each dose of vaccine (2,8).

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Notice to Readers**Announcement of Influenza Symposium**

A symposium on "Options for the Control of Influenza" will be held April 20-25, 1985, at Keystone, Colorado, as part of the University of California, Los Angeles, series on selected topics in molecular and cellular biology. In addition to workshops, major reports will be presented on inactivated vaccines, live attenuated vaccines, antivirals, and factors generated by techniques of molecular biology. Information and application forms may be obtained from:

Symposium on Molecular and Cellular Biology
Molecular Biology Institute
University of California, Los Angeles
Los Angeles, California 90024

The deadline for applications, including poster abstracts, is November 16, 1984.

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The data in this report are provisional, based on weekly reports to CDC by state health departments. The reporting week concludes at close of business on Friday; compiled data on a national basis are officially released to the public on the succeeding Friday.

The editor welcomes accounts of interesting cases, outbreaks, environmental hazards, or other public health problems of current interest to health officials. Such reports and any other matters pertaining to editorial or other textual considerations should be addressed to: ATTN: Editor, *Morbidity and Mortality Weekly Report*, Centers for Disease Control, Atlanta, Georgia 30333.

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